We claim:

1. A compound according to the formula E-C_a-R-C_b-A, wherein E is a therapeutic or diagnostic agent, R is a reactive group, C_a and C_b are connector groups between E and R and between R and A, respectively, and A is a group having an affinity for human serum albumin, wherein affinity group A comprises a sequence of amino acid residues -O_1-O_2-X_1-X_2-B in which the amino acid residues are independently selected from the group of all twenty naturally occurring amino acids.

2. A compound according to claim 1, wherein affinity group A comprises the sequence -O_1-O_2-X_1-X_2-B- wherein:

amino acid residue O_1 is selected from the group consisting of phenylalanine, arginine, glutamine, tyrosine and tryptophan;

amino acid residue O_2 is selected from the group consisting of leucine, arginine, glutamic acid, tryptophan and phenylalanine;

amino acid residue X_1 is selected from the group consisting of phenylalanine, tryptophan, methionine and tyrosine;

amino acid residue X_2 is selected from the group consisting of serine, arginine and glutamic acid; and

amino acid residue B is selected from the group consisting of serine, arginine and glutamic acid.

3. A compound according to claim 2, wherein at least one of the amino acid residues is a D-amino acid and at least one is an L-amino acid.

4. A compound according to claim 2, wherein one of the five amino acid residues is an L amino acid residue and the other four amino acid residues are D amino acid residues.

5. A compound according to claim 3, wherein the L-amino acid residue is selected from the group consisting of the amino acid residue O_2, the amino acid residue X_1, and the amino acid residue X_2.

6. A compound according to claim 2, wherein one of the five amino acid residues is a D-amino acid residue and the other four amino acid residues are L-amino acid residues.

7. A compound according to claim 6, wherein the D-amino acid residue is selected from the group consisting of the amino acid residue O_2, amino acid residue X_1, and amino acid residue X_2.

8. A compound according to claim 7, wherein the D-amino acid residue is the amino acid residue O_2.

9. A compound according to claim 2, wherein O_1 is phenylalanine and O_2 is leucine.

10. A compound according to claim 2, wherein O_1 is arginine and O_2 is arginine.

11. A compound according to claim 2, wherein O_1 is glutamine and O_2 is glutamic acid.

12. A compound according to claim 2, wherein O_1 is glutamic acid and O_2 is tryptophan.

13. A compound according to claim 2, wherein O_1 is tryptophan and O_2 is tryptophan.

14. A compound according to claim 2, wherein O_1 is tryptophan and O_2 is glutamic acid.

15. A compound according to claim 2, wherein X_1 is tyrosine.

16. A compound according to claim 2, wherein X_2 is glutamic acid.

17. A compound according to claim 2, wherein B is glutamic acid.

18. A compound according to claim 2, wherein O_1 is phenylalanine, O_2 is D-leucine, X_1 is tyrosine, X_2 is glutamic acid, and B is glutamic acid.

19. A compound according to claim 2, wherein the amino acid residue B is a C-terminal amino acid residue.

20. A compound according to claim 19, wherein the affinity group comprises the amino acid sequence $-O_1-O_2-X_1-X_2-B-NH_2$.

21. A compound according to claim 2, wherein the compound further includes a reactive group attached to the affinity group, and wherein the reactive group includes a functional group selected from the group consisting of carboxy, phosphoryl, alkyl esters, thioesters, phosphoesters, ortho esters, imidates, mixed anhydrides and disulphides.

22. A compound according to claim 21, wherein the reactive group is bonded directly to the O_1 amino acid residue in the affinity group.

23. A compound according to claim 22, wherein the reactive group is bonded to the O_1 amino acid residue by an amide linkage.

24. A compound according to claim 21, wherein the reactive group has the formula $-X-R_1-C(O)-$, where C(O) is an alpha carboxyl, R_1 includes a substituted or unsubstituted aromatic group and X is selected from the group consisting of S, O and N.

25. A compound according to claim 24, wherein X is bonded directly to an aromatic carbon atom in R_1.

26. A compound according to claim 24, wherein R_1 is unsubstituted phenyl.

27. A compound according to claim 26, wherein the –X- and –C(O)- substituents are bonded to the unsubstituted phenyl is a para configuration.

28. A compound according to claim 24, wherein R_1 is phenyl substituted with one or more groups selected from the group consisting of a halogen, NO_2, SO_2NR_2, SO_3R, SO_2NH_2, SO_2NHF, NR_3^+, CF_3, CCl_3, CBr_3, $C\equiv N$, SO_3H, CO_2H, CO_2R, CHO, $CORNH_2$, NHR, NR_2, OH, $NHCOCH_3$, NHCOR, OCH_3, OR, CH_3, CH_2CH_3 and RC_6H_5.

29. A compound according to claim 24, wherein the reactive moiety is bonded directly to the O_1 residue via the carboxyl carbon.

30. A compound according to claim 21, further comprising a first connecting group connecting the reactive group and the affinity group.

31. A compound according to claim 30, wherein the first connecting group is bonded to the reactive group via an ester, thioester, amide, sulfonate ester or sulfonamide linkage.

32. A compound according to claim 30, wherein the first connecting group is bonded to the O_1 amino acid residue in the affinity group via an ester, thioester, amide, sulfonamide, urea, thiourea or carbamate linkage.

33. A compound according to claim 30, wherein the first connecting group includes a backbone chain of between about 1 and about 25 atoms.

34. A compound according to claim 33, wherein the first connecting group includes a backbone chain of between about 2 and about 16 carbon atoms.

35. A compound according to claim 30, wherein the first connecting group includes an unsaturated carbon atom backbone chain of between about 1 and about 25 atoms.

36. A compound according to claim 21, further including an entity bonded to the reactive group.

37. A compound according to claim 36, wherein the entity is a therapeutic or diagnostic agent.

38. A compound according to claim 36, wherein the entity is bonded directly to the reactive group by a linkage selected from the group consisting of an amide linkage, an ester linkage, a thioester linkage and a sulfonate ester linkage.

39. A compound according to claim 38, wherein the entity is bonded to the reactive group by an ester or thioester linkage.

40. A compound according to claim 36, further comprising a second connecting group connecting the entity to the reactive group.

41. A compound according to claim 40, wherein the second connecting group is bonded to the entity by an ester, thioester, amide, sulfonate ester or sulfonamide linkage.

42. A compound according to claim 40, wherein the second connecting group is bonded to the reactive group by an ester, thioester, amide or sulfonate ester linkage.

43. A compound according to claim 40, wherein the second connecting group includes a backbone chain of between about 1 and about 25 atoms.

44. A compound according to claim 43, wherein the second connecting group includes a backbone chain of between about 2 and about 16 carbon atoms.

45. A compound according to claim 40, wherein the second connecting group includes an unsaturated carbon atom backbone chain of between about 1 and about 25 atoms.

46. A compound according to claim 36, wherein the entity comprises a biotinyl group.

47. A compound according to claim 46, wherein the biotinyl group is bonded directly to the reactive group by an ester, thioester or amide linkage.

48. A compound according to claim 46, wherein the reactive group has the formula –X-Ph-C(O)-, and where X is oxygen, sulfur or nitrogen.

49. A compound according to claim 48, wherein the –X- and –C(O)- substituents on the Ph group are bonded is a para configuration.

50. A compound according to claim 47, further comprising a second connecting group connecting the biotin group to the reactive group.

51. A compound according to claim 50, wherein the second connecting group is bonded to the biotin group by an amide linkage.

52. A compound according to claim 50, wherein the second connecting group is $-NH-(CH_2)_n-C(O)-$, where n is an integer between 1 and 25.

53. A compound according to claim 52, wherein the second connecting group is $-NH-(CH_2)_5-C(O)-$.

54. A compound according to claim 52, wherein the second connecting group is –NH-CH_2-C(O)-.

55. A compound selected from the group consisting of biotin-S-Ph-C(O)-F*l*YEE-NH_2, biotin-OPh-C(O)-F*l*YEE-NH_2, LC-biotin-S-Ph-C(O)-F*l*YEE-NH_2 , biotin-Gly-OPh-C(O)-F*l*YEE-NH_2, fluorescein-Gly-OPh-F*l*YEE-NH_2, LC-biotin-OPh-C(O)-F*l*YEE-NH_2, argatroban-AEA_3-βAla-Gly-OPh-C(O)-F*l*YEE-NH_2, and fluorescein-thiourea-AEA_3-Gly-OPh-C(O)-F*l*YEE-NH_2.

56. A method for screening for the affinity of a compound for human serum albumin, comprising the steps of:

a) immobilizing the albumin on a test substrate;

b) incubating the compound with the albumin under conditions that support covalent interaction between the compound and the albumin;

c) quenching the interaction between the albumin and the compound; and

d) assaying for activity of the albumin, wherein the compound is of the formula E-C_a-R-C_b-A, wherein E is a therapeutic or diagnostic agent, R is a reactive group, C_a and C_b are connector groups between E and R and between R and A, respectively, and A is a group having an affinity for albumin, wherein affinity group A comprises a sequence of amino acid residues in which the amino acid residues are independently selected from the group of all twenty naturally occurring amino acids.

57. .....A method according to claim 56 wherein the entity E is selected from the group consisting of biotin, fluorescein and argatroban.

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